

HUNGARIAN NEUTRAL VOWELS

Catherine O. RINGEN

Department of Linguistics, University of Iowa, USA

and

Miklós KONTRA

Hungarian Academy of Sciences

Received May 1988; revised version November 1988

This paper reports on recent empirical investigations of Hungarian which call into question several widely accepted claims about neutral vowels in Hungarian. Subjects treated *e* more like a front harmonic vowel than a neutral vowel, they were more likely to use back vowel suffixes with mixed vowel roots with *e* and *é* in the last syllable if the roots were disyllabic than if they were longer, and most subjects responded with front harmonic suffix vowels for most roots with neutral vowels in the final two syllables.

1. Introduction

Much recent work on vowel harmony has involved reanalysis of familiar data within a theoretical framework that assumes autosegmental and/or underspecified phonological representations. Analysis of neutral vowels in a language like Hungarian has proved to be particularly challenging. This paper reports on recent empirical investigations of Hungarian which call into question several of the widely accepted claims about neutral vowels in Hungarian.¹

Descriptions of Hungarian vowel harmony typically state that the vowels of (standard Budapest) Hungarian are as in table 1.

* An earlier version of this paper was presented at the Winter Meeting of the LSA in San Francisco, 1987. We are grateful to Vera Galántai and Andrea Reményi for their assistance in administering our most recent questionnaires at Mórész Zsigmond Gimnázium, Széchenyi István Gimnázium, and Thököly úti Gimnázium, all in Budapest.

¹ For results of recent empirical investigations of Finnish vowel harmony, parallel to those reported here for Hungarian, see Heinämäki and Ringen (1988).

Table 1

	Front				Back		
	Unrounded		Round		Unrounded	Round	
	Short	Long	Short	Long	Long	Short	Long
High	i [i]	i [i:]	ü [y]	ü [y:]			
Mid		é [e:]	ö [œ]	ö [œ:]		u [u]	ú [u:]
Low	e [ɛ]				á [ɑ:]	o [o]	ó [o:]
						a [ɔ]	

It is further suggested that in native non-compound words, back vowels (*u, ú, o, ó, a, á*) do not occur in words with *front harmonic* vowels (*ü, ü, ö, ő*). The front unrounded vowels (*i, í, e, é*) are usually classified as neutral.

It is widely accepted that harmonic suffix vowels agree in backness with harmonic root vowels in Hungarian. Hence, most suffixes with harmonic vowels have at least two alternates, one with a front harmonic vowel and one with a back harmonic vowel. (Hungarian also has roundness harmony which is ignored here. For recent discussion see Kornai (1987)). Some examples showing alternations of suffix vowels are given in (1). The dative suffix *nek/nak* has a back vowel when the root contains back harmonic vowels, but front vowel when the root contains front harmonic vowels:

(1) ház	'house'	ház-nak	dative
mókus	'squirrel'	mókus-nak	dative
ürü	'sheep'	ürü-nek	dative
öröm	'joy'	öröm-nek	dative

Following roots with only neutral vowels, harmonic suffix vowels are generally front as illustrated in (2):²

(2) víz	'water'	víz-nek	dative
fillér	'penny'	fillér-nek	dative

In Hungarian, as in most languages with vowel harmony, loanwords often violate harmony restrictions in that both front and back harmonic vowels are found in the same root. Nonetheless, it is usually claimed that harmonic suffix vowels following such disharmonic roots obey the same harmony rules as

² As is well known, there are about fifty neutral vowel roots that exceptionally require back harmonic suffix vowels, e.g. *csík* 'stripe', *cél* 'aim'.

they d
root v
Fron
suffix l
vowels
high fr

(3) r
k

Althou
precisel
sugges
vowel r
is just a
Other
allow su
from Va

(4) fo
ko
an

Most of
or in a s
prescripti

2. Our st

Empiri
garian ve
represent
between 5
university
containing
than one
our invest
choice (see

they do with native roots: they agree in backness with the last non-neutral root vowel.

Front unrounded vowels are usually characterized as being irrelevant to suffix harmony in so-called mixed vowel roots (i.e. in roots with both back vowels and front vowels). Some examples with a back vowel followed by a high front unrounded vowel are given in (3):

(3)	radír	'eraser'	radír-nak	dative
	kavics	'pebble'	kavics-nak	dative

Although the last root vowel is front, harmonic suffix vowels are back – precisely what one would expect if *i* and *í* were neutral vowels. It is often suggested that suffix vowels behave in a similar fashion following mixed vowel roots ending in non-high front unrounded vowels as well – indeed this is just another way of saying that these vowels are neutral.

Other mixed vowel roots have been described as VACILLATORS which allow suffixes with either front or back harmonic vowels. Some examples from Vago (1974) are given in (4):

(4)	fotel-nek	fotel-nak	'armchair'	dative
	konkrét-nek	konkrét-nak	'concrete'	dative
	analízis-nek	analízis-nak	'analysis'	dative

Most of these so-called vacillators end in a *non-high* front unrounded vowel or in a sequence of *two* front unrounded vowels. As Vago (1974: 88) notes, prescriptivists teach that the back alternate of such vacillators is preferable.

2. Our studies

Empirical studies conducted in Hungary suggest that descriptions of Hungarian vowel harmony, such as the one just sketched, do not accurately represent the facts about Hungarian neutral vowels. In all of our studies between 50 and 100 native speakers of Hungarian, primarily high school and university students in Budapest and Debrecen, were presented with sentences containing blanks and asked to give the appropriate form (or forms if more than one was possible) of a word supplied in its uninflected form. Early in our investigations we found that sentence context can affect suffix vowel choice (see Kontra, Ringen, and Stemberger (to appear a, b)). In particular,

suffix vowel choice can be influenced by the harmonic quality of a vowel in a preceding morphologically identical suffix. We have, therefore, controlled for sentence context in all but our first questionnaires. Results are not reported for any item if they could have been affected by sentence context.

Before we began our investigations we were warned that large numbers of subjects would not agree on anything and that it was useless to administer questionnaires as we planned to do. We found, however, that in many cases, subjects showed surprisingly little disagreement with linguists' descriptions of Hungarian vowel harmony. Some examples where the overwhelming majority of subjects gave responses which coincide with traditional descriptions of Hungarian vowel harmony are given in table 2. Numbers indicate the percen-

Table 2

	% Front	% Back	% Both	Gloss
(a) makaróni	0.0	100.0	—	'macaroni'
szalámi	0.0	100.0	—	'salami'
karitatív	0.0	100.0	0.0	'charitable'
konstruktív	0.0	100.0	0.0	'constructive'
aktív	0.0	100.0	0.0	'active'
illusztris	0.0	100.0	0.0	'illustrious'
rivális	0.0	100.0	0.0	'rival'
konzervatív	0.0	100.0	0.0	'conservative'
dentális	0.0	100.0	0.0	'dental'
rituális	2.2	97.8	0.0	'ritual'
negatív	2.0	97.1	1.0	'negative'
kvalitatív	3.6	96.4	0.0	'qualitative'
föderatív	2.3	95.3	2.3	'federal'
vegetatív	3.6	94.6	1.8	'vegetative'
imperatív	3.6	94.5	1.8	'imperative'
kurzív	4.1	93.9	2.0	'italic'
pantomim	6.7	88.5	4.8	'pantomime'
neolit	6.5	87.0	6.5	'neolithic'
produktív	4.2	86.5	9.4	'productive'
Pilsudszki	16.0	84.0	0.0	'Pilsudski'
destruktív	20.4	73.1	6.1	'demoralizing'
deduktív	20.5	65.9	13.6	'deductive'
bibliofil	26.1	58.7	15.2	'bibliophile'
(b) könyv	100.0	0.0	0.0	'book'
neglizsé	98.1	1.0	1.0	'negligee'
ház	0.0	100.0	0.0	'house'
(c) iroda	0.0	100.0	0.0	'bureau'
szofőr	98.2	1.8	0.0	'chauffeur'

tages c
both fr
and or
roots v
that th
almost
roots
with a
harmor
front u
vowels.
subject
but fro)

2.1. Th

In ot
selves,
harmon
expect s
vowels.
that e [
harmon
we have
For all
majority
words a
words, e
suggests
table 3 v

³ On son
from the h
requested,
appears in
asked for
⁴ It is int
(e.g. by Va
not differ
are actual
harmonic.

tages of subjects that used suffixes with *front* vowels, with *back* vowels, with *both* front and back vowels (i.e. gave two alternates, one with a front vowel and one with a back vowel). Listed in table 2(a)³ are all the mixed vowel roots with *i* or *i* in the last syllable. These results are consistent with the claim that the high front unrounded vowels are irrelevant to suffix harmony, since almost all subjects responded with a back harmonic suffix vowel for most roots. For the word *negatív*, for example, 97.1% of the subjects responded with a back suffix vowel. The forms in table 2(b) show that subjects use front harmonic suffix vowels when roots contain front harmonic vowels or only front unrounded vowels, but back suffix vowels with roots containing back vowels. The forms in table 2(c), which are disharmonic loanwords, show that subjects use back harmonic suffix vowels when the last root vowel is back, but front harmonic vowels if the last root vowel is a front harmonic vowel.

2.1. The status of *e*

In other cases, however, subjects showed similar agreement among themselves, but their responses were at odds with most accounts of vowel harmony. If, as is usually suggested, *e* [ɛ] is a neutral vowel, then we would expect suffixes following roots such as those in table 3 to have *back harmonic* vowels. They do not, however. These results are inconsistent with the claim that *e* [ɛ] is a neutral vowel, but consistent with the claim that it is front harmonic. The list in table 3 gives all the mixed vowel roots ending in *e* that we have tested.

For all but one of the mixed vowel roots with final *e* that we have tested, the majority of subjects used suffixes with *front* harmonic vowels. For some words a considerable amount of variation occurred. But for the majority of words, over 88% of the subjects used a front harmonic suffix vowel.⁴ This suggests that subjects consider *e* to be front harmonic. Compare the forms in table 3 with those in table 2(a). There is also considerable variation for some

³ On some tests, subjects were not asked to give alternatives. Words from such tests are omitted from the lists reported in this paper if the word also appeared on a test on which alternatives were requested. When a word only appeared on a test on which alternatives were not requested, a dash appears in the rightmost column. If a word appeared on more than one questionnaire which asked for alternatives, we have listed the results with the least intersubject agreement.

⁴ It is interesting to note that two words in table 3, *József* and *október*, which have been claimed (e.g. by Vago (1980)) to be exceptional in that they allow only front harmonic suffix vowels, are not different from most other mixed vowel roots ending with *e*. Our data suggest that these forms are actually totally regular. Vago (personal communication) now acknowledges that *e* is front harmonic.

Table 3

	% Front	% Back	% Both	Gloss
szüfrazsett	100.0	0.0	0.0	'suffragette'
bitumen	98.1	0.0	1.9	'bitumen'
ciklámen	98.1	1.9	0.0	'cyclamen'
hipochonder	98.0	1.0	1.0	'hypochondriac'
József	97.8	2.2	0.0	'Joseph'
amulett	95.3	3.8	0.9	'amulet'
október	92.3	1.9	5.8	'October'
sláger*	90.0	6.0	4.0	'hit tune'
karakter*	89.8	5.1	5.1	'character'
cinóber	89.5	5.3	5.3	'cinnabar'
partner	88.6	3.8	7.6	'partner'
szalamander*	87.9	12.1	—	'salamander'
leander	87.7	3.5	8.8	'oleander'
pasztell*	86.2	13.8	—	'pastell'
koffer	78.6	21.4	—	'trunk'
púder	73.8	15.0	11.2	'powder'
Ábel	70.6	11.8	15.7	'Abel'
hotel	61.8	38.2	—	'hotel'
bakter	55.3	30.9	13.8	'night watchman'
fotel	25.0	75.0	—	'armchair'

* The words *sláger*, *karakter*, *szalamander* and *pasztell* have appeared on several tests with different suffixes. Subjects' responses have differed by over 10 percentage points in some cases, apparently at least partially as a function of the suffix used. For example, *szalamander* occurred in several sentences. The lowest percentage of front suffix vowels used in a neutral context was 87.9 with the possessive suffix *(j)a/(j)e*; the highest percentage of front suffix vowels used was 97.0 with the nominative plural suffix *ak/ek*. The percentages reported in table 3 are the lowest percentages of front suffix vowel responses that occurred.

words in table 2(a), but for the majority of forms, subjects use 88% or more *back* harmonic suffix vowels. Comparing table 3 and table 2(a), we see that there is apparently as much justification for calling *e* front harmonic as there is for calling *i* neutral.

The suggestion that *e* is a front harmonic vowel rather than a neutral vowel is not new. It is so characterized by Szépe (1958) Ringen (1975, 1977, 1980) and Papp (1975). Nonetheless, most accounts of Hungarian vowel harmony describe *e* as neutral and suggest either that regular mixed vowel roots ending with *e* [ɛ] allow both front and back harmonic suffix vowels or only *back* harmonic suffix vowels. The data from our investigations indicate that the

regular case is that they require *front* harmonic suffix vowels. This, it will be recalled, is the opposite of what is advised by prescriptivists.⁵

2.2. Number of syllables and suffix vowel choice

It is apparent from the data in table 3 that more subjects use front suffix vowels with longer mixed vowel roots than with shorter ones. The seven roots with which subjects tended to use the most back suffix vowels – those at the end of the list – are all *disyllabic*. Szépe (1958) has also noted the relationship between number of syllables and suffix vowel choice.

Table 4

	% Front	% Back	% Both	Gloss
(a) kávé	0.0	100.0	0.0	'coffee'
szomszéd	0.0	100.0	0.0	'neighbor'
koktél	0.0	100.0	0.0	'cocktail'
konkrét	2.9	97.1	—	'concrete'
ankét	3.8	90.5	5.7	'meeting'
affér	8.7	84.8	6.5	'affair'
trapéz	8.5	83.0	8.5	'trapeze'
szatén	12.2	73.5	14.3	'satin'
parfé	11.8	72.5	15.7	'parfait'
athén	17.3	67.3	15.4	'Athens'
bohém	12.2	65.3	22.5	'Bohemian'
arzen	37.0	50.0	13.0	'arsenic'
norvég	23.9	50.0	26.1	'Norway'
obszcén	49.0	37.3	13.7	'obscene'
szlovén	69.6	13.0	17.4	'Slovenian'
(b) hidrogén	96.9	0.0	3.1	'hydrogen'
nitrogén	84.0	10.0	6.0	'nitrogen'
majonéz	82.6	6.5	10.9	'mayonnaise'
autogén	82.2	4.4	0.0	'autogenous'
szingaléz	75.0	22.0	3.0	'Singhalese'
homogén	62.0	28.0	10.0	'homogeneous'
krizantém	30.0	70.0	—	'chrysanthemum'
diadém	17.9	73.2	8.9	'diadem'
pónálé	5.4	91.1	3.6	'penalty'
kabaré	2.9	97.1	—	'cabaret'
limonádé	0.0	100.0	0.0	'lemonade'
parádé	0.0	100.0	0.0	'parade'

⁵ Indeed it might be that the vacillation that is found can be attributed to prescriptivists' admonitions.

This same pattern is more striking with the long mid front unrounded vowel *é* [e:]. All of the mixed vowel roots with *é* in the final syllable that we have tested are given in table 4, the disyllabic roots in (a) and the longer roots in (b). As can be seen in table 4(a) for most (but not all) disyllabic mixed vowel roots with a back vowel followed by the long front unrounded midvowel *é* [e:] subjects did respond with a back harmonic suffix vowel as would be expected if *é* [e:] were a true neutral vowel. Note, however, that there is more variation than when the root final vowel is *i* or *i* (compare table 4(a) with table 2(a)). When roots have more than two syllables, however, a different picture emerges. As shown in table 4(b) the majority of the subjects respond with *front* harmonic suffix vowels for half of roots with more than two syllables that we have tested. Indeed, if we set aside the roots that end in *é*, which apparently are different (for reasons we do not understand), then we see that subjects use front suffix vowels with the majority of polysyllabic mixed vowel roots which have *é* in the last syllable. In Kontra and Ringen (1987) it is suggested that the differences in suffix choice may have to do with stress. In Hungarian stress falls on the first syllable. Thus, *é* in the examples in table 4(a) is preceded by a *stressed* back vowel whereas it is preceded by an *unstressed* back vowel in the examples in table 4(b). Similarly in the examples in table 3, the back vowel preceding *e* seems to be harder to ignore if it is stressed than if unstressed.

2.3. Two neutral vowels

As noted earlier, it is usually suggested that mixed vowel roots with front unrounded vowels in the last two syllables allow both front and back suffix vowels. However, as shown in table 5 the vast majority of subjects in our

Table 5

	% Front	% Back	% Both	Gloss
harakiri	99.0	1.0	0.0	'hari-kari'
alibi	95.3	2.8	1.9	'alibi'
paralízis	94.3	4.7	.9	'paralysis'
bronchitisz	93.0	3.0	4.0	'bronchitis'
poézis	89.9	6.7	3.4	'poetry'
analízis	88.5	7.7	3.8	'analysis'
aszpirin	58.8	23.5	17.7	'aspirin'
pozitív	7.8	82.4	9.8	'positive'
április	0.0	100.0	0.0	'April'

studi

neutr

It

equal

but o

choic

back

Far

found

root. i

(5)

Farkas

(6) s

s

s

A

A

A

We hav

Table 6

(a) mam-i

(b) mam-i

(a) Aczél*

(b) Aczél*

(a) szomsz

(b) szomsz

* Acél anc

Although

(a) forms

studies responded with *front* harmonic suffix vowels for almost all words with neutral vowels in the last two syllables we have tested.

It seems that few speakers actually allow both front and back vowels equally following roots with neutral vowels in the final two syllables. For all but one of the forms above, over 80% of the subjects agreed about suffix choice. However while they chose front vowels for most items, they agreed on back vowels in two cases.

Farkas and Beddor (1987) claim that front harmonic suffix vowels are also found with mixed vowel words when the neutral vowels are not part of the root. For example, they cite the forms in (5):

- (5) mam + i + nak 'mother' diminutive₁, dative
 mam + ci + nak 'mother' diminutive₂, dative
 mam + i + ci + nek/nak 'mother' dim₁ + dim₂, dative

Farkas (1982) gives other examples reproduced below:

- (6) szomszéd 'neighbor'
 szomszéd + nak 'neighbor' dative
 szomszéd + ék + nek/nak 'neighbor' collective, dative
 Acél 'Acél' (family name)
 Acél + nak 'Acél' dative
 Acél + ék + nek/nak 'Acél' collective, dative

We have tested these forms and our results confirm these claims (see table 6).

Table 6

	% Front	% Back
(a) mam-i	0.0	10.0
(b) mam-i-ci	45.7	54.3
(a) Acél*	2.9	97.1
(b) Acél-ék	25.0	75.0
(a) szomszéd	0.0	100.0
(b) szomszéd-ék	17.4	82.6

* *Acél* and *Aczél* are alternative spellings of the same surname.

Although subjects respond almost exclusively with back suffix vowels for the (a) forms in table 6, when there are two neutral vowels between the back

vowel of the root and the harmonic suffix vowel as in the (b) forms, subjects allow more front suffix vowels. Note, however, that the percentages of front responses are much lower than found for most items in table 5. As Farkas and Beddor observe, these examples are important because they show that it is the two neutral vowels which cause the front suffix vowels and not some exceptional feature of the roots. As pointed out in Ringen (1988), this means that any analysis that claims that neutral vowels are completely irrelevant to harmonic suffix vowel determination cannot be correct.

Note finally that vacillation occurs only when there are *two* neutral vowels. Compare the forms in table 6(b) with those in table 7 where the suffix *ék* occurs with a root final back vowel and no vacillation was found.

Table 7

	% Front	% Back	Gloss
Gábor-ék	0.0	100.0	'Gábor' coll.
Farkas-ék	0.0	100.0	'Farkas' coll.

3. Conclusion

Our data suggest the following about neutral vowels in Hungarian:

- (1) *e* [ɛ], the low front unrounded vowel is best viewed as front harmonic not neutral (see table 3).
- (2) No neutral vowel in Hungarian is altogether transparent; indeed it seems that it is difficult to ignore more than one preceding neutral vowel when determining suffix vowel quality (see table 5).
- (3) The number of syllables in a mixed vowel root with a non-high unrounded vowel (*é* or *e*) in the last syllable seems to correlate with subjects' use of front suffix vowels. When *e* or *é* is preceded by a *stressed* back vowel (as they are in disyllabic mixed vowel roots) suffixes are more likely to have back vowels than when *e* or *é* is preceded by an *unstressed* back vowel (see tables 3 and 4).
- (4) The high front unrounded vowels (*i* and *í*) are different from the mid front unrounded vowel (*é*) (compare tables 2(a) and 4).

These results are consistent with the observations of Vago (1974) and L. Anderson (1980) that Hungarian neutral vowels are not equally neutral. The

high front
vowel less

References

- Anderson,
Vago (e
Farkas, D
Farkas, C
B. Nees
Part I
Chicago
Harms, F
(eds.),
Heinämä
the wit
Kontra,
Ural-
Kontra,
Studie
Wien:
Kontra,
choic
lingui
Kontra,
hang
Kornai,
1987
Papp, F
Ringen
sity,
Ringen
and
132
Ringen
135
Ringen
Szépe,
Éric
Vago,
Dis
Vago,

* Fo

high front unrounded vowels seem most neutral, the mid front unrounded vowel less neutral and the low front unrounded vowel not neutral at all.⁶

References

- Anderson, L., 1980. Using asymmetrical and gradient data in the study of vowel harmony. In: R. Vago (ed.), 1980, 271-340.
- Farkas, D., 1982. Neutral vowels in Hungarian. Paper from the 1982 LSA.
- Farkas, D. and P. Beddor, 1987. Privative and equipollent backness in Hungarian. In: A. Bosch, B. Need and E. Schiller (eds.), 23rd annual regional meeting of the Chicago Linguistics Society, Part Two: Parasession on autosegmental and metrical phonology, 90-105. Chicago, IL: Chicago Linguistics Society.
- Harms, R., 1987. What Helmholtz knew about neutral vowels. In: R. Channon and L. Shockey (eds.), In honor of Ilse Lehiste, 381-399. Dordrecht: Foris.
- Heinämäki, O. and C. Ringen, 1988. Finnish vowel harmony: An empirical study. Paper read at the winter meeting of the Linguistic Society of America.
- Kontra, M. and C. Ringen, 1986. Hungarian vowel harmony: The evidence from loanwords. *Ural-Altaiic Yearbook* 58, 1-14.
- Kontra, M. and C. Ringen, 1987. Stress and harmony in Hungarian loanwords. In: K. Rédei ed., *Studien zur Phonologie und Morphologie der uralischen Sprachen, Studia Uralica*, 81-96. Wien: Verband der wissenschaftlichen Gesellschaften Österreichs.
- Kontra, M., C. Ringen and J. Stemberger, to appear a. The effect of context on suffix vowel choice in Hungarian vowel harmony. In: *Proceedings of the XIV international congress of linguists*, E. Berlin, 1987.
- Kontra, M., C. Ringen and J. Stemberger, to appear b. Kontextushatások a magyar magánhangzó-harmóniában. In: *Nyelvtudományi Közlemények*.
- Kórmay, A., 1987. Hungarian vowel harmony. In: Megan Crowhurst (ed.), *The proceedings of the 1987 WCCFL*, 147-161.
- Papp, F., 1975. *A magyar főnév paradigmatis rendszere*. Budapest: Akadémiai Kiadó.
- Ringen, C., 1975. *Vowel harmony: Theoretical implications*. Ph.D. dissertation, Indiana University. New York: Garland Publishing, 1988.
- Ringen, C., 1977. Vowel harmony: Implications for the Alternation Condition. In: W. Dressler and O. Pfeiffer (eds.), *Phonologica 1976, Innsbrucker Beiträge zur Sprachwissenschaft*, 127-132.
- Ringen, C., 1980. A concrete analysis of Hungarian vowel harmony. In: R. Vago (ed.), 1980, 135-154.
- Ringen, C., 1988. Transparency in Hungarian vowel harmony. *Phonology* 5(2), 327-342.
- Szépe, G., 1958. Vegyes magánhangzóú szavaink illeszkedésének kérdéséhez. *Nyelvtudományi Értekezések* 17, 105-129.
- Vago, R., 1974. *Hungarian generative phonology*. Ph.D. dissertation, Harvard University. Distributed by the Indiana University Linguistics Club.
- Vago, R. (ed.), 1980. *Issues in vowel harmony*. Amsterdam: Benjamins.

⁶ For a suggestion of how this 'neutrality hierarchy' can be accounted for, see Harms (1987).